



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,536	01/07/2002	Hans-Jochen Paul	Q67852	4860
7590 03/22/2004			EXAMINER	
SUGHRUE MION, PLLC 2100 Pennsylvania Avenue. NW Washington, DC 20037-3213			PRITCHETT, JOSHUA L	
			ART UNIT	PAPER NUMBER
			2872	
DATE MAILED: 03/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/036,536	Applicant(s) PAUL ET AL.	
	Examiner Joshua L Pritchett	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-51, 53-57 and 59-63 is/are rejected.
- 7) ☒ Claim(s) 52 and 58 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to Amendment filed February 6, 2004. Claims 26, 28-30, 42 and 44-46 have been amended and claims 52-63 have been added as requested by the applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-26, 28-30, 32-42, 44-46 and 48-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani (US 6,396,626) in view of Hashimoto (US 5,532,871).

Regarding claims 17, 34, 39 and 50, Otani teaches an optical component comprising a substrate with at least one surface; a multilayer system of at least six stacked layers arranged to the at least one surface of the substrate, each of the layers comprising a high refractive or a low refractive dielectric material (Fig. 2). Otani further teaches the use of only one high and one low refractive material (col. 4 lines 7-11). Otani further teaches the high refractive index material being aluminum oxide (col. 4 lines 10-11). Otani further teaches the use of a layer with an optical thickness equal to or less than 0.33λ (col. 5 lines 6-16). Otani further teaches that none

of the layers has a geometrical thickness of more than about 0.5λ (col. 5 lines 6-16). In the broadest reasonable definition of about 0.5λ the layers taught by Otani (col. 5 lines 6-16) meet the claimed limitation. Otani teaches the second layer having a thickness of less than 0.33λ (col. 4 lines 36-47). Based on the specification of the applicant and the Otani reference the applicant's second layer is equivalent to Otani's ninth layer based on the layers proximity to the substrate. Otani lacks reference to the use of magnesium fluoride as the low refractive index material. Hashimoto teaches that silicon dioxide, which is used in Otani as the low refractive material, and magnesium fluoride both are commonly known and used low refractive materials and that magnesium fluoride can be used in place of silicon dioxide (abstract lines 5-7). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani filter use magnesium fluoride as taught by Hashimoto for the purpose of reducing the optical thickness of the low refractive layers without incurring the cost of making physically thinner layers.

Regarding claims 18 and 51, Otani teaches none of the layers has a geometrical thickness of more than about 0.35λ (col. 5 lines 6-16).

Regarding claim 19, Otani teaches none of the layers has an optical thickness of more than 0.52λ (col. 5 lines 6-16).

Regarding claim 20, Otani teaches the first layer has an optical thickness in a range from 0.31λ to 0.52λ (col. 4 line 55-65).

Regarding claim 21, Otani teaches wherein the second layer has an optical thickness less than 0.1λ (col. 5 lines 6-16).

Art Unit: 2872

Regarding claims 22 and 35, Otani teaches wherein the second layer has the smallest optical thickness (col. 5 lines 6-16).

Regarding claim 23, Otani teaches wherein the third layer has an optical thickness less than 0.12λ (col. 5 lines 6-16).

Regarding claims 24 and 40, Otani teaches that none of the low refractive material layers has a geometrical thickness of more than about 70nm (col. 5 lines 6-16).

Regarding claims 25 and 41, Otani teaches the overall geometrical thickness of the multilayer system amounts to less than 2λ (col. 5 lines 6-16).

Regarding claims 26 and 42, Otani teaches the overall geometric thickness of the low refractive material layers is less than λ (col. 5 lines 6-16).

Regarding claims 28, 44 and 53, Otani teaches the ratio of the sum of the low refractive thickness to the high refractive thickness is less than 1.2 (col. 5 lines 6-16).

Regarding claims 29, 45 and 54, Otani lacks reference to the claimed performance of the optical filter however; Otani teaches the structure of the optical filter as described in the claim limitations and therefore would be able to perform any function claimed by the claim limitations.

Regarding claims 30, 46, 55-57 and 61-63, Otani teaches the invention as claimed but lacks reference to the incident angle and the reflectivity of the filter. Hashimoto teaches that at an incident angle of 0 degrees and a reflectance of less than 0.5% (Fig 10). All incident angles for the Hashimoto invention are 0 degrees (Tables 1-8) and Fig. 10 shows a reflectance of less than 0.5% at a wavelength of 280 nm. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the reflectance of the Otani invention have

Art Unit: 2872

the dependence on incident angle as taught by Hashimoto for the purpose of minimizing reflection of incident light at common incident angles.

Regarding claims 32 and 48, Otani teaches the filter working for a wavelength of about 248nm (col. 3 line 62).

Regarding claims 33 and 49, Otani teaches the reflectance within the working wavelength range covers a bandwidth of more than 1.1 below a given reflectance, wherein the bandwidth is the ratio between the wavelengths of the long wave limit and the short wave limit of the wavelength range, in which the reflectance lies below 0.3% (Fig. 3).

Regarding claim 36, Otani teaches only one high refractive material and only one low refractive material are used (col. 4 lines 6-11).

Regarding claim 37, Otani teaches the invention as claimed but lacks reference to the use of magnesium fluoride as the low refractive index material. Hashimoto teaches that silicon dioxide, which is used in Otani as the low refractive material, and magnesium fluoride both are commonly known and used low refractive materials and that magnesium fluoride can be used in place of silicon dioxide (abstract lines 5-7). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani filter use magnesium fluoride as taught by Hashimoto for the purpose of reducing the optical thickness of the low refractive layers without incurring the cost of making physically thinner layers.

Regarding claim 38, Otani teaches wherein the high refractive material consists substantially of aluminum oxide (col. 4 lines 10-11).

Regarding claims 52 and 58, Otani teaches wherein the sum of the optical thickness of the low refractive index layer is no less than 0.5λ (col. 5 lines 6-16).

Claims 27, 31, 43 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani ('626) in view Hashimoto as applied to claims 17 and 34 above, and further in view of Otani (US 5,885,712).

Regarding claims 27 and 43, Otani ('626) teaches the invention as claimed but lacks reference to no more than six layers. Otani ('712) teaches the multilayer system has no more than six layers (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani ('626) invention be limited to six layers as taught by Otani ('712) for the purpose of limiting the physical size of the optical filter.

Regarding claims 31 and 47, Otani ('626) teaches the invention as claimed but lacks reference to the substrate material. Otani ('712) teaches the substrate is made of fused silica or crystalline fluoride (col. 2 line 16). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani ('626) substrate made of the material taught by Otani ('712) for the purpose of allowing light to pass through the substrate.

Response to Arguments

Applicant's arguments, see Amendment, filed February 6, 2004, with respect to the rejection(s) of claim(s) 17-51 under Otani ('712) in view of Hashimoto have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Otani ('626) in view of Hashimoto.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rancourt (US 4,735,488) teaches the use of optical filters with layers having a thickness less than one quarter of a wavelength.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 571-272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

Art Unit: 2872

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLP
NR



DREW A. DUNN
SUPERVISORY PATENT EXAMINER